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The Great Northern Steamships.

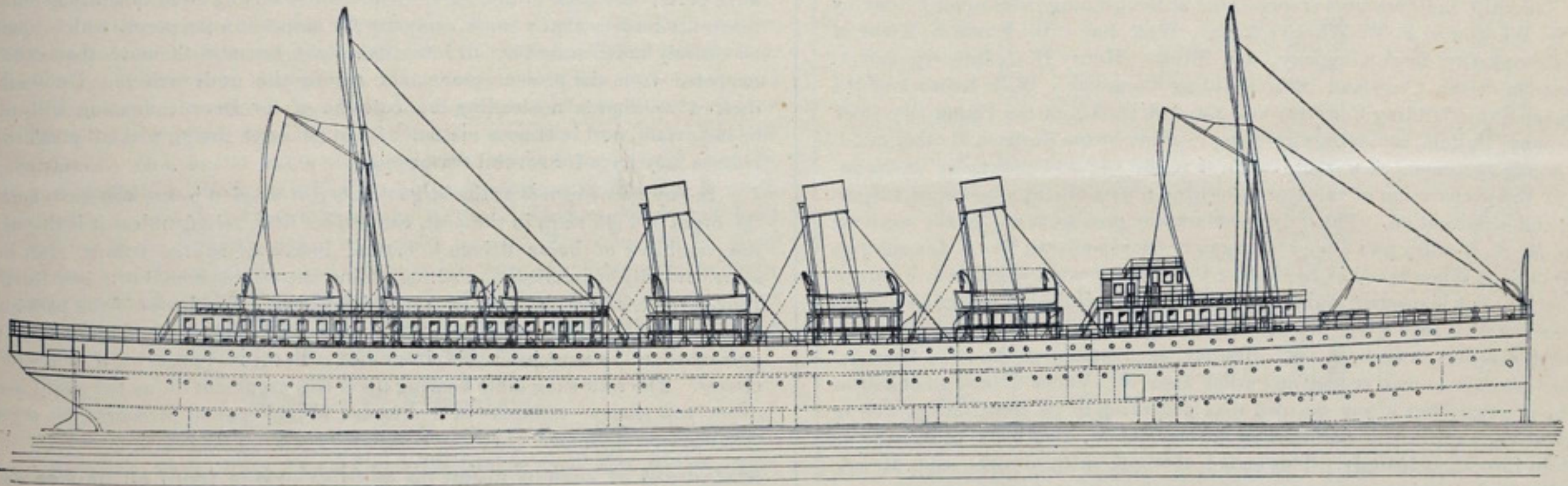
Twenty-eight Belleville boilers and twin engines of the quadruple expansion type, using steam at 210 pounds absolute, will furnish power for the Great Northern passenger steamers, the hulls for two of which are now well under way at the ship yard of the Globe Iron Works Company, Cleveland. Definite arrangements regarding these powerful steam generators and latest type of engines were finally concluded this week, and the work of constructing the two big steamships will now go forward very rapidly, although it is not expected that they will be ready for service until June, 1894. The cylinders of the twin engines are to be 25, 36, 51½ and 74 inches by 42 inches stroke, and they are expected to develop 7,000 horse power.

This short description of engines and boilers is enough to convince anyone, having even a slight knowledge of the class of boats now owned in this country, that the construction of these passenger ships will not only be far in advance of anything ever attempted in the way of naval architecture on the lakes, but the boats will compare favorably with the best of sea-going passenger steamers. This latest decision as to power for these boats is, in itself, enough to show that Mr. James J. Hill, president of the

the most elegantly appointed steamships ever built to run on American waters.

Mr. John Gordon, general manager, and Mr. T. P. Carpenter, general passenger agent of the Northern Steamship Company, together with Mr. Miers Coryell, who is agent in this country for the Belleville boiler, and who as a naval engineer will represent the owners in the construction of the machinery, were all in Cleveland this week concluding the arrangements here referred to. Mr. Gordon recognizes very thoroughly the great departure being made from previous practice in this country in the adoption of Belleville generators and quadruple expansion engines, but this is necessary on account of the power required to produce 20 miles an hour. The new Inman line steamers are to have quadruple expansion engines, and there is nothing experimental in the use of the Belleville boiler.

Although in use in a large number of big merchant steamers of France and in the French and Russian navy, some of them developing as high as 14,000-horse power, the application of Belleville boilers to marine purposes in this country has up to this time been confined to yachts and steam vessels of a limit of about 500 horse power. The boiler is, however, the only tubulous



ONE OF THE GREAT NORTHERN PASSENGER STEAMERS, BUILDING IN CLEVELAND.

Great Northern Railway, of which system the passenger boats will be a part, is sparing no effort to reach the speed of 20 miles an hour demanded for the lake service between Buffalo and Duluth. There is no doubt that it is the ultimate intention of Mr. Hill to acquire for the lakes a fleet of six vessels all equal in every respect to the two now building, and all intended exclusively for passenger service, as the six boats of the Northern Steamship Company now in commission are used entirely for freight. Within another month the Great Northern Railway Line will have been completed to Everett on Puget Sound, and Mr. Hill and his associates are determined in their intention to eventually add to their system of railway and steamship lines across the American continent, a line of steamers on the Pacific, in competition with the present service of the Canadian Pacific Railway.

The accompanying engraving will give a fair idea of the appearance of these new lake steamships when completed. They are to be 360 feet keel, 380 feet over all, 44 feet beam and 34 feet deep. The apparent difference in the depth as compared with lake steamers is due to the fact that their sides will be built high up to the top of the cabins, alike to ocean-going steamers. Accommodations will be furnished in these boats for 316 cabin passengers and 300 immigrants, and they will in all respects be

boiler in use on merchant vessels of large size, and in its application to these lake vessels a big advantage will undoubtedly be found in the fresh water.

Among the latest French merchant steamers fitted with these boilers are the *Australien*, *Polynisien* and *Tasmanien* of the Messageries Maritime Company, which company builds its own steamships and controls more vessel property than any other company in France. The boats are engaged in passenger and freight service between Marseille and Sidney, N. S. W., and are 502 feet long, with a gross displacement of 8,638 tons. They have triple expansion engines, with cylinders 44, 67 and 106 inches diameter by 54 inches stroke, developing 7,650 horse power. These dimensions of the vessels and machinery will serve to show the class of steamers to which the Belleville generators have already been fitted.

While running in open water on Lakes Erie, Huron and Superior these lake greyhounds will draw about 18 feet of water. This draft, to be secured by water ballast, is necessary to the required speed and will also be a great factor of safety and comfort to passengers in heavy weather. The facilities for filling and discharging water compartments will be such that on leaving Buffalo the vessel can be lowered in the water, raised again on reaching the rivers and the draught increased again on upper lakes.

DETROIT MEETING OF LAKE SHIPPING INTERESTS.

Little Progress Made Toward the Organization of an Association for Inspection and Classification—A Lack of Interest Among Vessel Owners.

Editorial Correspondence.

DETROIT, Mich., Dec. 15.—At the meeting of vessel owners, ship builders and general agents of the underwriters doing business on the lakes, held here on Thursday, Friday and Saturday of last week, little progress was made toward the formation of a general association for the inspection and classification of lake vessels, which now seems to be the only hope entertained by the general agents for a readjustment of the numerous questions growing out of the loss of two large steel steamers on the lakes during the past season. It was not intended, of course, that at this preliminary meeting the insurance men would do anything more than secure from builders, owners and experts all possible information regarding the present practice in construction of steel vessels. In this they were partially successful, and they spent a great deal of time in discussing such information as they had received, but there was a notable lack of interest in the meeting among vessel owners, and it is doubtful if they can be induced to take any part in the publication of the proposed improved and revised Inland Lloyds Register, which the insurance men concluded, after their deliberations, would cost for the first year about \$11,000.

At the first meeting Thursday the following representatives of the different general agencies were present: Capt. David Vance, David Vance & Co., Milwaukee; George L. McCurdy, agent Insurance Company of North America Chicago; C. W. Elphicke, C. W. Elphicke & Co., Chicago; S. Warner White, Michigan Fire and Marine Insurance Company, Detroit; J. S. Gadsen, Aetna Insurance Company, Chicago; H. S. Sill, Worthington & Sill, Buffalo; C. A. Macdonald, Crosby & Macdonald, Chicago; W. J. Sandroek, Smith, Davis & Co., Buffalo; P. H. Fleming, P. H. Fleming & Co., Chicago; J. J. Clarke, Detroit Fire and Marine Insurance Company, Detroit.

The ship builders were represented at the evening session on Friday by F. W. Wheeler of F. W. Wheeler & Co., West Bay City; Frank E. Kirby of the Detroit Dry Dock Company, and Messrs. Henry D. Coffinberry and A. Angstrom of the Cleveland Ship Building Company. W. I. Babcock of the Chicago Ship Building Company and Edward Gaskin of the Union Dry Dock Company, Buffalo, sent letters agreeing to abide by the decision of other builders in any agreement they might make as to the part to be taken by the builders in the preparation of rules or in bearing a part of the expense of inspection and classification. The only vessel owners present at any of the meetings were M. A. Bradley and James Corrigan of Cleveland and W. A. Livingstone of Detroit. When asked as to whether the vessel owners would bear a part of the expense of inspection and classification, these gentlemen informed the underwriters that they were in attendance simply as individuals and could not speak for owners in general. Mr. Bradley, as president of the Lake Carriers' Association, had received an invitation from Mr. Vance to send a committee to the meeting, but it was decided that according to its constitution, and in view of varied interests involved in the association, that body could take no part in insurance matters. This ended the talk with owners and Messrs. Bradley and Corrigan returned to Cleveland without having accomplished anything more than an informal talk with the underwriters.

To the steel builders, who were nearly all represented at the session on Friday, the underwriters outlined their plans for the publication of a new register and asked for suggestions as to the best men available for the preparation of a set of rules and for conducting the inspection service. The builders were asked to consider the question of preparing rules themselves, but they were all of the opinion that the task was not only a difficult one, but was also laborious and would require more time than any of them could spare from their regular employment. All of them promised, however, to give assistance to anyone who might be delegated to the work, and they also promised to bear a portion of the expense of publishing the new register, in event of an understanding being reached between owners, underwriters and builders. Mr. George F. Williams, who was until a short time ago superintendent at the ship yard of F. W. Wheeler & Co., was mentioned in connection with the office of surveyor, with the understanding, of course, that in the preparation of rules the assistance of one or more naval architects, not connected with any of the lake yards but having some knowledge of the practice here, should be called in. With the conclusion of an informal talk along this line, the builders, who had been in consultation with the underwriters for only a couple of hours, left for their homes, and after a short evening session Messrs. David Vance of Milwaukee, J. J. Clarke of Detroit and W. J. Sandroek of Buffalo were appointed a committee to take further action regarding the detail of securing funds and officers for the establishment and maintenance of a new register. This committee was appointed with a view to overcoming the delays attendant upon work of this kind when performed by a large body, and the general agents will be called together again by Mr. Vance as soon as there is occasion for another general meeting.

Messrs. E. Platt Stratton, chief engineer surveyor for the American Shipmasters' Association, and Capt. F. D. Herriman, American lake representative

of the Bureau Veritas of France, were also at the Russell house during the greater part of the time while the underwriters were in session, and information was sought of them relative to comparisons between the rules of their associations and the practice that has prevailed in the building of steel vessels on the lakes.

It can be said in truth that the agents of lake underwriters were very much disappointed in the apparent refusal of owners to take any interest in this first meeting. Their disappointment will be increased upon learning that managers of the Lake Carriers' Association at a meeting in Cleveland on Monday of this week, refused to enter into any agreement to pay a portion of \$11,000 estimated as the first cost of establishing the proposed new register. It is the general opinion among owners, and especially the great number of them who own no steel vessels, that they are under no obligations to the underwriters, who have burdened them with heavy rates of insurance, while reaching out for a line of risks on steel boats, with which they have now been bitten. Unfortunately it is still probable that the owners of the medium and poorer grades of boats will be made to suffer as a result of the present disturbance in insurance matters. Accidents to steel vessels during the past season have simply resulted in directing the attention of the Bureau Veritas, American Shipmasters' Association and other leading classification associations to the lakes, and it is the coming of representatives of these organizations that the general agents on the lakes fear more than the withdrawal of their own companies on account of the accidents referred to. The demand for improved construction is imperative upon owners and builders and is already being complied with in vessels now being built. These new steel vessels will find insurance at Lloyds more readily than ever before, on account of the classification to be given them by registers which cover the whole world, and the general agents of the lakes also have in view, on this account, the danger of making their rules for the proposed new Inland Lloyds too rigid. Their system of maintaining expensive head offices, general and local agents, and otherwise dividing commissions is, it seems, too expensive to permit of their continuing in control of the risks on steel vessels, when the movement toward classification in the big registers seems inevitable. It is the opinion of some vessel owners who have given attention to the different questions arising from this discussion of insurance matters that a stock company for inspection purposes, which would be entirely independent of all interests, might accomplish more than is now expected from the present movement among the underwriters. Unless the drift of opinion is misleading the outcome of the Detroit meeting will not be important, and insurance matters will go on next spring without much system, as they have for several seasons past.

In any event owners of the large number of wooden boats, who have borne the brunt of high rates in the past, can expect little relief, unless it is through the possibility of being driven to mutual insurance in the future. But the same diversity of interests now acting against the establishment of a new Inland Lloyds Register are obstacles to mutual insurance. The losses of the past season go to prove, however, more forcibly than ever before the truth of the argument that the most profitable insurance is in these vessels of the medium classes. The following table bearing upon this argument shows the total losses of the past season, exclusive of collisions, which cannot, of course, be taken into consideration:

Statement of vessels given up as total losses from all causes excepting collision, season of 1892.

	American.		Canadian.		Total.	
	No.	Value.	No.	Value.	No.	Value.
A1*.....	2	\$420,000	.....	.....	2	\$420,000
A1.....	.....	.....	.....	.....	.....	.....
A1½.....	.....	.....	.....	.....	.....	.....
A2.....	10	116,500	5	67,000	15	183,500
A2½.....	6	56,000	2	24,000	8	80,000
B1.....	10	39,800	4	19,500	14	59,300
B1½.....	5	10,100	.....	.....	5	10,100
B2.....	2	3,500	1	800	3	4,300
oo.....	.....	.....	1	800	1	800
	35	\$645,900	13	\$112,100	48	\$758,000

Official Numbers and Tonnage.

The bureau of navigation, E. C. O'Brien commissioner, assigned official numbers to the following lake vessels during the week ending Saturday, Dec. 10: Steam—Ann Arbor No. 2, Toledo, tonnage gross 1144.91, net 572.46, No. 106,984; Mollie L., Grand Haven, tonnage gross 22.92, net 18.16, No. 92,483.

A house boat which is being built on Friendly island by E. W. Dewey of New York, is attracting considerable attention. It is to be 75 feet over all with 18½ feet beam. It will have six fine rooms, with all home comforts, a parlor 14 by 15 feet, a drawing room 10 by 14 feet and a kitchen 6 by 14 feet. The boat will cost \$6,000 and was designed by A. A. Leyere.

CHICAGO LAKE INTERESTS.

WESTERN OFFICE, MARINE REVIEW,
No. 13 Western Union Building, CHICAGO, ILL., Dec. 15.

C. A. Macdonald returned from the Detroit meeting of underwriters quite well satisfied with what had been accomplished there. The spirit manifested was to him an indication of an agreement and the ultimate adoption of some plan which would solve the problem raised by the loss of the Western Reserve and Gilcher. Another meeting will be held at an early date, in order to have the machinery in motion before the opening of navigation next spring.

Rain hindered loading grain Tuesday, so that the Missoula, last boat to leave for Buffalo this year, did not get away until Wednesday. At no time during the past two weeks has there been any especial reason for boats not continuing to carry grain and coal. The weather has not been as bad as in November.

Capt. John G. Keith, who is a member of the Lake Carriers' board of managers, states that at the annual meeting of the association, he shall endeavor to have an appeal to the light-house board adopted, that light-houses shall be kept in operation much later than they are now—say Dec. 15. Habit more than anything else closes navigation Nov. 30, instead of Dec. 10.

A conservative vessel owner, who never makes a positive statement without full consideration, says that the Chicago sail fleet in the lumber trade has barely paid expenses the past season. High sailors' wages ate up most of the little profit in that traffic. When captains have sailed their own boats and saved the pennies, there is a little to be paid on the many mortgages, but not much more than a master's wages.

Deputy Collector Burke and the customs inspectors at the barge office have been transferred to the world's fair grounds for the winter. Already many longing eyes are being turned towards the appointments in the gift of the next collector of the port.

Never have there been so many boats reported as "probably lost" as this season. Newspapers find a serious question in dealing with telegrams stating that boats are suspiciously long overdue. On the one hand, there is a probability that the boat is all right, and it seems heartless to cause needless anxiety among the friends and relatives of the crew. On the other, there is the possibility of a loss, and the certainty that the boat is not where she ought to be. If the papers could have a report of vessels in shelter at Grand Island much anxiety could have been allayed this fall. Every effort was made to secure such a report, but owing to the long distance from a telegraph office and the difficulty in getting the names of boats from the mainland, this plan had to be abandoned. One way in which some of the trouble could be avoided would be to have captains whose boats are in out-of-the-way places waiting for a storm to subside, telegraph the fact to the Lake Marine News Association and have it sent out in the regular order of the marine report. This plan will be given a thorough trial next season, and if captains will co-operate with the newspapers much good can be accomplished. Many points, of course, are out of the reach of telegraph offices, but there are many others which could be reached with some effort on the part of masters.

Buffalo Port Matters.

Special Correspondence to the MARINE REVIEW.

BUFFALO, N. Y., Dec. 15.—This port is feeling small this winter on account of the comparatively insignificant fleet laid up here. The propeller lines have given us more than half their boats, for westbound freight starts early, but the wild boats either went to Chicago or to some ports between here and Saginaw. The ship store man is disconsolate.

The lake lumber shippers are trying to settle the stevedore troubles and are holding meetings to see what can be done. They do not agree very well, as some adhere to the lumber shovers union and others to the stevedores. The union has a way of making it pleasant by exacting 10 cents per 1,000 on all cargoes taken out of vessels not loaded by union men. This rule tied up the schooners Negaunee and John Martin at the Tiffit farm this fall and they are not unloaded yet. A similar difficulty held the Saginaw Valley's last cargo on board for some time. Some boats have had to pay the extortion, but most of them avoided it either by stealth or force.

The owners of metal boats never get quite out of earshot of the people who delight in talking of "tin pans," and they are hearing no end of such talk. When the America came out with no between deck and with no frills to make her expense account sound large every port was full of people predicting that she would prove too weak to carry a full load. The Brazil met the same verdict when she came out. Their owners were cautioned against putting ore into them. Now the Maytham, the third of the series, is out and is at once pronounced the weakest of the lot and a story was started that she couldn't get any insurance. The owners merely reply that they are satisfied with the boats. They declare that the Maytham has more actual strengthening work than any other vessel on the lakes and that the Brazil has inspection papers from the British Lloyds that cost her \$500, something that scarcely any other lake vessel possesses.

The underwriters are not saying much about the Detroit meeting apparently. One leading agent declined to be interviewed on the subject. He was willing to accommodate, he said, but he really didn't know what was brought out at Detroit. It looks as though he was right for once. The plan is all to be.

Over 58 Per Cent. of Chicago Freight.

Nearly a million more tons of freight was shipped eastward from Chicago by lake and rail during the seven months and two weeks from April 14 to December 1, 1892, than during the same period in 1891. From weekly reports issued by the Chicago board of trade, it is found that the total shipments during this period, which covers the season of navigation, amounted to 5,197,194 tons, 3,052,014 tons, or 58.7 per cent. having been shipped by the lake route and 2,145,180 tons, or 41.3 per cent. by the rail route. Last year during the open season of navigation the shipments amounted to 4,265,934 tons, of which 2,705,084 tons, or 58.4 per cent., was carried by lake and 1,560,850 tons, or 41.6 per cent., by rail. In addition to having cared for its portion of the increase this season the lake route gained .3 per cent. on the ten trunk lines leading from Chicago to the east. These ten lines are: Michigan Central, Wabash, Lake Shore, Fort Wayne, Pan Handle, Baltimore & Ohio, Grand Trunk, Chicago & Erie, Big Four and Nickel Plate. Following is the lake and rail movement by weeks for the season:

Week ending	Lake movement, net tons.	Rail movement, net tons.
April 14	46,050	79,897
" 21	77,254	64,557
" 28	98,471	72,841
May 5	71,485	68,391
" 12	82,447	74,708
" 19	82,003	82,257
" 26	105,657	64,230
June 2	108,675	78,808
" 9	124,273	72,947
" 16	126,476	64,526
" 23	115,259	65,387
" 30	130,423	66,412
July 7	104,146	59,598
" 14	118,129	63,960
" 21	87,833	59,762
" 28	95,746	55,354
Aug. 4	97,206	50,033
" 11	88,183	55,406
" 18	91,047	56,320
" 25	89,173	65,528
Sept. 1	83,290	59,896
" 8	73,744	53,374
" 15	97,345	61,599
" 22	75,444	59,837
" 29	87,371	57,358
Oct. 6	64,553	55,287
" 13	75,604	51,332
" 20	53,810	55,462
" 27	62,675	53,486
Nov. 3	69,407	54,508
" 10	77,719	56,945
" 17	49,620	59,723
" 24	99,599	67,070
Dec. 1	141,893	78,381
Total	3,052,014	2,145,180

Although the gain of .3 per cent. of the lake route over the combined traffic of the railroad lines is small, it is gratifying and will serve to correct the idea once generally held that the lines parallel to the lake route would absorb the business between Chicago and Buffalo.

Launches in Small Canals.

Industries of San Francisco says: "The launching of the Campania, new Cunard steamer, was a difficult undertaking. The Clyde, at the Fairfield works, is barely 900 feet wide in the direction of the diagonal launching ways, and as the ship was 600 feet long there was only 300 feet in which to stop the 9,000 tons of weight. This was accomplished by means of drag weights attached to the ship by numerous chains of varying length, so that one after another came taut, offering a gradual resistance. The anchoring device was eight heaps of chain on the ground that had to be dragged, a curious expedient, but one not without reason when we come to think of it. The resistance to the ship is somewhat indefinite in quantity, but absolute in nature, removed from all adjustment or judgment of attendants, and all chances of mistake or failure are eliminated. This expedient is no doubt an old one in launching when there is not room, but certainly there has never been a case before when a ship was launched into a canal the width of which was about one-half the ship's length."

Vessels built on the lakes have been launched into slips and canals which were in width much less than half the length of the craft, and in a few instances they have been launched into dry-docks, but in all such cases the launches were, of course, side launches.

Contracts for Dredging Work Costing \$3,340,000.

Special Correspondence to the MARINE REVIEW.

DETROIT, Mich., Dec. 15.—Dredging contractors from all parts of the lakes have been here for several days past bidding on the different sections of the 20-foot channel project, between Duluth, Chicago and Buffalo, which involves an expenditure of \$3,000,000, exclusive of engineering expenses, estimated at \$334,000, and on which the work is to extend over a period of three years. With bids opened on five of the eight sections, it is certain that the lowest figures are all below the engineer's estimates, so much so, that it is now positively assured that the entire work will be put under contract for the maximum width of 800 feet. In the following summary of bids on the five sections for which proposals have been opened, the prices given are per cubic yard and the lowest figures are marked with a star:

BIDDERS.	Sec. 3, Sailors' Encampment, 90,366 yards, lime-stone rock.	Sec. 7, Grosse Point, 2,900,000 yards, clay and sand.	Sec. 6, St. Clair Flats, 950,000 yards, clay and sand.	Sec. 8, Mouth of Detroit River, 1,080,000 yards, sand and gravel.	Sec. 2, Little Mud Lake, sand, gravel and hard pan, 380,000 yards.
	Cents.	Cents.	Cents.	Cents.	Cents.
R. J. Cram, Detroit	\$2 74	23	34	37	38
L. P. & J. A. Smith, Cleveland	5 00	29	17 1/4	*18	42
James Rooney, Toledo		37	*16 1/2	28 1/4	
Carkin, Stickney & Cram, Saginaw	3 86	27	26	58	42
C. H. Starke & Co., Milwaukee		29	24 1/2		
W. A. McGillis & Co., Chicago		41	24 1/2		
Hingston & Woods, Buffalo	4 18	28	23	57	
E. R. Seward, Albany		32	23	59	
Hughes Bros. & Bangs, Syracuse		21 9-10	24 3/8	44 3/8	
Breyman Bros., Toledo		*14 3/8			
A. J. Dupuis, Detroit		26 3/4			
Sadler & Allen, Detroit			24		
C. E. Mitchell & Co., Ludington, Mich.			18 9-10	74	*25 9-10
McCollin & Lee, Essexville, Mich.			25	34	
John Stang, Lorain, O.			21		
John Hickler, Buffalo	* 2 43				42
Dunbar & Sullivan, Buffalo	3.23				

There was evidently no attempt at a combination among the bidders, and if there had been, at least as regards the first and most important sections upon which proposals were opened, some surprises would undoubtedly have fallen to the knowing ones. Hughes Bros. & Bangs of Syracuse, N. Y., who are engaged in constructing the Sault lock, were not looked upon as competitors but they submitted an important bid on the Grosse point work.

It was thought that some eastern dredging concerns would try to secure a portion of this work, but E. R. Seward of Albany, N. Y., is the only bidder as yet showing up, whose place of business is distant from the lakes. J. Shaddock of Beaufort, N. C., who has been here all week, also intended to seek a portion of the big job, but his idea was to bring machinery from the coast and construct scows here, which would undoubtedly be a losing undertaking, as against the strong competition encountered on the lakes. Mr. E. S. Upham of Williams, Upham & Dougherty and S. O. Dixon of Racine, Wis., are also here, although they have not as yet appeared as bidders.

On the most important section, the work at Grosse point flats, which involves the removal of about 2,900,000 cubic feet of clay, gravel and sand, the price asked by the successful bidders, Breyman Bros. of Toledo, was 6 cents a yard less than that of the next lowest bidder, which would be equal to about \$175,000 on the job. The Messrs. Breyman had dug holes all over the section before putting in a bid. They own the largest dredge in the United States and are in every way capable of carrying out the contract. They already have under contract a \$100,000 job on the government straight channel work at Toledo.

L. P. & J. A. Smith, whose successful bid on the section at the mouth of the Detroit river is very low in comparison with other bids, also took the precaution of going over the channel very carefully at this point, and are undoubtedly fully aware of the kind of material to be removed.

Wheat and Corn in Store at Lake Ports.

The following table, prepared from reports of the Chicago board of trade, shows the stocks of wheat and corn in store at the principal points of accumulation on the lakes on Dec. 10, 1892:

	Wheat, bu.	Corn, bu.
Chicago	10,703,000	4,583,000
Duluth	10,537,000	
Milwaukee	2,158,000	9,000
Detroit	367,000	54,000
Toledo	3,525,000	176,000
Buffalo	4,998,000	618,000
Total	32,288,000	5,440,000

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St. Mary's Falls Canal Commerce.

Again the statement of commerce through the St. Mary's Falls canal shows a wonderful increase over all previous years. It is enough to note in connection with the full statement printed below, that the freight tonnage of the canal for the season just closed aggregates 11,214,333 net tons, a gain of 2,325,574 tons, or 26 per cent., over 1891. In the registered tonnage passing through the canal there is a gain of 27 per cent., and the value of freight shows a proportionate increase, although the price per unit on flour, wheat and grain has been reduced for the present season. We are indebted to Gen. Poe for the following comparative statement of the canal commerce:

COMPARATIVE STATEMENT OF COMMERCE THROUGH ST. MARY'S FALLS CANAL, MICHIGAN, FOR THE SEASONS OF 1891 AND 1892.

ITEMS.	Designation.	SEASON.		INCREASE.		DECREASE.	
		1891.	1892.	Amount.	Per ct.	Amount.	Per ct.
(a) Vessels	Number	10,191	12,580	2,389	23		
Lockages	Number	4,981	5,867	886	18		
Tonnage, registered	Net tons	8,400,685	10,647,203	2,246,518	27		
Tonnage, freight	Net tons	8,888,759	11,214,333	2,325,574	26		
Passengers	Number	26,190	25,896			294	1
Coal	Net tons	2,507,532	2,904,266	396,734	16		
Flour	Barrels	3,780,143	5,418,135	2,637,992	43		
Wheat	Bushels	38,816,570	40,994,780	2,178,210	6		
Grain, other than wheat	Bushels	1,032,104	1,666,690	634,586	61		
Manufact'd and pig iron	Net tons	69,741	101,520	31,779	46		
Salt	Barrels	234,528	275,740	41,212	18		
Copper	Net tons	69,190	64,993			4,197	6
Iron ore	Net tons	3,560,213	4,901,132	1,340,919	38		
Lumber	M feet, B. M.	366,305	512,844	146,539	40		
Silver ore	Net tons	1,731	1,930	199	11		
Building stone	Net tons	44,080	39,698			4,382	10
(b) Unclassified freight	Net tons	417,093	459,146	42,053	10		

NOTE (a) Steamers..... 8,737
Sails..... 3,324
Unregistered..... 519

Total.....12,580

Canal was open to navigation during the season of 1891—225 days.
Canal was open to navigation during the season of 1892—233 days.

TABLE SHOWING THE ESTIMATED VALUE OF FREIGHT THROUGH ST. MARY'S FALLS CANAL, MICHIGAN, DURING SEASON OF 1892.

ITEMS.	Designation.	Quantity.	Price per unit.	Valuation.
Coal, (hard and soft)	Net tons	2,904,266	\$ 3 50	\$10,164,931 00
Flour	Barrels	5,418,135	4 00	21,672,540 00
Wheat	Bushels	40,994,780	75	30,746,085 00
Grain, (other than wheat)	Bushels	1,666,690	56	933,346 40
Manufactured iron	Net tons	59,772	50 00	2,988,600 00
Pig iron	Net tons	41,748	17 00	709,716 00
Salt	Barrels	275,740	1 00	275,740 00
Copper	Net tons	64,993	200 00	12,998,600 00
Iron ore	Net tons	4,901,132	3 50	17,153,962 00
Lumber	M feet, B. M.	512,844	18 00	9,231,192 00
Silver ore and Bullion	Net tons	1,930	153 79	296,814 70
Building stone	Net tons	39,698	10 00	396,980 00
Unclassified freight	Net tons	459,146	60 00	27,548,760 00
				\$135,117,267 10

NOTE—The price per unit is based on the estimated values used in 1885, except in case of Flour, Wheat and Grain, where prices of 1892 are used.

Average value per ton of freight.....\$12.05.

At the Works of the Detroit Dry Dock Company.

At the Wyandotte yard of the Detroit Dry Dock Company four big steel steamers, contracted with the past two months, are all on the ways, and at the Orleans street yard, Detroit, the monster wooden car ferry is nearly ready to be launched. The Selwyn Eddy, steel freight carrier launched at Wyandotte on Wednesday of last week, is also at the Orleans street yard receiving boilers and machinery. These six steamers, no one of which will cost less than \$200,000, and all coming within the output of the company for less than a single year, certainly indicate a most active season in the different departments of the plant of this company. Of the four steel steamers on the stocks at the Wyandotte yard, two are the side-wheel passenger boats for the Detroit & Cleveland Steam Navigation Company; the third is the package freight boat for the New York Central Railway, and the fourth a coarse freight steamer for Capt. E. M. Peck and others. Every day a car load of from 15 to 20 tons of finished plate is received for these four boats, on a contract with the Cleveland Rolling Mill Company for 2,500 tons of this material. Although work on the two Detroit & Cleveland passenger boats, which will cost about \$300,000 each, was not begun until late in the fall, the builders say they will launch one of them in a few weeks, and will have both in commission on the opening of the passenger season in June next. The dry dock company has prepared plans for another big dry dock and will very probably begin construction early in the spring.

Iron Mining.

VALUE OF LEADING STOCKS.

Quoted by Chas. H. Potter & Co., No. 104 Superior St. Cleveland, O.

Stocks.	Par Value.	Bid.	Asked.
Cleveland-Cliffs Iron Company.....	\$100 00	\$.....	\$ 57 00
Champion Iron Company.....	25 00	.....	42 50
Chandler Iron Company.....	25 00	.....	43 50
Jackson Iron Company.....	25 00	.....	.....
Lake Superior Iron Company.....	25 00	.....	37 00
Minnesota Iron Company.....	100 00	67 00	72 00
Pittsburgh & Lake Angeline Iron Co.....	25 00	.....	140 00
Republic Iron Company.....	25 00	9 25	10 00
Ashland	25 00	.....	.....
Section Thirty-three.....	25 00	.....	4 00
Brotherton.....	25 00	2 00	2 50
Iron Belt.....	25 00	.....	2 00
Aurora.....	25 00	.....	9 00

At the special meeting of the Republic Mining Company, held in Cleveland on the 14th inst., it was found that the Chicago stockholders who were represented by Messrs. Leiter, Austrian and others, and who opposed the proposed resolution giving the directors authority to transfer operations of the company to new properties, presumably the Mesaba range, had secured control of about 29,000 shares of stock to be voted upon the question. A two-thirds vote was necessary to carry the resolution and, as the directors and their associates represented but about 56,000 shares outside of treasury stock, no vote was taken. A resolution was passed unanimously for consideration of the same question at the annual meeting next month. A statement from the management showed assets aggregating \$1,062,000, of which \$340,000 was vessel property, \$52,000 cash, \$289,000 bills and accounts receivable and the balance mine inventory and ore on hand.

An important document presented at the meeting was a report from Prof. Charles D. Lawton, late state geologist of Michigan, relative to the present condition of the mine and its future prospects for the production of ore. The report was prepared at the request of President Rees. Mr. Lawton says in connection with a review of past operations in the mine and a technical description of its present condition: "I have been somewhat familiar with the Republic mine since work was first begun in it, in 1872. I have been through it many times in the past, and have thus seen it in its palmiest days, when it contained large bodies of the best of ore. I was not fully prepared for the great changes now apparent in the mine. The falling off in its productive capacity is so complete as to suddenly relegate the mine from its position as first, or nearly first at least, in the list of hard ore mines, to a place among the smaller and less profitable mines; certainly very little as compared to the income realized in former years. I knew that during several years past the lenses of ore in all pits of the mine were contracting; that in every pit, as greater depth was attained from year to year the bodies of ore were becoming smaller; but I did not realize that in that portion of the mine where formerly the greater part of the product has been secured the ore bodies had almost utterly disappeared. It seems to be the fact, however pitiable the truth may be, that the rich lenses of ore that were once found in shafts Nos. 5, 6, 7 and 8 have vanished and their traces cannot be found. I confess that it is difficult to realize that the great Republic mine that has so long stood as the standard of stability and quality should now suddenly collapse; that the important bodies of ore should now finally, 'pinch out' and disappear almost entirely. It does not appear that the Republic mine can long be a large or profitable producer of ore. I include in this judgment the West Republic, with the past mining in which I am familiar, and with the diamond drill and other explorations that were made on the property, also. I think the better way to pursue, is to work the mine in a moderate way and continue to explore the ground as has lately been done. I see no reason to alter the plans of work, as we discussed them down at the mine. I was accompanied in my examination by Messrs. Pascoe, Forsberg and the mining captain, and I have in connection with my observations relied on the information which they have given me. My report is made up from what I saw, and the statements of these gentlemen."

A Chicago dispatch says that at a meeting of the executive committee of the Minnesota Iron Company, Monday, it was resolved to build a line of road from the most practicable point between Duluth and Two Harbors in a northwesterly direction straight into the heart of the Mesaba iron district. A surveying

party will be immediately organized under the charge of Engineer Angst for the purpose of laying out the proposed line.

P. H. Carroll and Samuel Redfern have leased the old Pioneer furnace at Negaunee, Mich., which it was the intention of the Cleveland-Cliffs company to abandon. One stack will be put in blast immediately. Mr. Carroll was founder at the furnace for years, and Mr. Redfern had charge of the coal and other supplies. The lessees think they can turn out between fifty and sixty tons of iron a day with profit.

After being connected with the Republic mine continuously for twenty-one years, Supt. Peter Pascoe last week resigned his position to become a state senator.

Joseph Selwood has been made vice-president of the Duluth & Iron Range Railway. He is said to have given up his contract at the Chandler.

Engines of the Christopher Columbus.

In the erecting shop at the works of S. F. Hodge & Co., Detroit, the triple expansion engines of the world's fair whaleback passenger steamer Christopher Columbus were open for inspection during the present week, and the sight of this massive machinery, with its bright, rounded columns and a profusion of brass work, was certainly attractive. The wrought-iron finished columns in front, which are new to the lakes, give the whole work a most pleasing appearance. The cylinders are 26, 42 and 70 inches diameter by 42 inches stroke. The high pressure cylinder is fitted with a piston valve, and also an independent liner of hard iron, and the intermediate and low pressure cylinders have triple ported slide valves. The engine is provided with a steam reverse gear, and also a new device of hand reverse gears. A system of steam and hand power for pinching the engine off the center is also provided.

The bed plate is of the box-bed type, and has a very massive appearance, being 19 feet long and 11 feet wide. It is fitted with six journal bearings, and weighs fifteen tons. The crank shaft is 13 inches in diameter, with solid forged couplings, and divided into three equal parts, each part being interchangeable. The columns consist of three cast-iron forked legs on the back of the engines, and six wrought-iron finished columns on the front, with all necessary bracing to make the whole structure a very substantial piece of frame work. Each cylinder is placed on columns independent of each other, and they are tied together with fore and aft brace rods, leaving them free to expand. All hand and waste gear is neatly connected to a central position on the front of the engine. The cylinders are covered with white wood lagging, arranged in narrow staves alternating with fluted molding and finished off with polished brass bands. In addition to this the tops of cylinders are covered with cast-iron polished false covers and brass conical heads, carrying casings for the upper end of the piston rods. The engine is fitted with a Knowles independent vertical air-pump and condenser and with independent combined boiler, feed, bilge and cooler pumps.

Increase in Average Size of Lake Vessels.

E. C. O'Brien, commissioner of navigation, has just issued a small pamphlet entitled "The Shipping Interests of the United States," which is a part of the commissioner's annual report, which is now nearing completion. In this pamphlet Mr. O'Brien presents a great many arguments in favor of protection for American shipping, and in this connection calls attention to advancement secured to lake commerce through protective coasting laws. He says:

"Our lake tonnage increased from 711,269 tons in 1882 to 1,183,582 tons in 1892. The naval architecture of the lakes has been revolutionized during the last twenty years. The size of vessels employed on the lakes has also steadily increased, as shown in the following statistics: The average registered tonnage per vessel was:

	TONS.
1887.....	626.3
1888.....	701.5
1889.....	790.5
1890.....	833.8
1891.....	862.1
1892.....	884.14

"The tonnage of the great lakes now embraces a fleet of large steam vessels, models of beauty and nautical efficiency, which offer to shippers and passengers an unsurpassed transportation service.

MARINE REVIEW.

DEVOTED TO THE LAKE MARINE AND KINDRED INTERESTS.

JOHN M. MULROONEY, } PROPRIETORS.
F. M. BARTON, }
HOMER J. CARR, Associate Editor and Manager Chicago Office,
Western Union Building, 110 LaSalle Street.

Published every Thursday at No. 516 Perry-Payne Building, Cleveland, O.

SUBSCRIPTION—\$2.00 per year in advance. Convenient binders sent, post paid, 75 cents. Advertising rates on application.

The books of the United States treasury department contain the names of 3,600 vessels, measuring 1,154,870.38 tons in the lake trade. In classification of this fleet the lakes have more steamboats of 1,000 to 2,500 tons than the combined ownership of this class of vessels in all other sections of the country. The number of vessels of 1,000 to 2,500 tons on the lakes on June 30, 1891, was 310 and their aggregate gross tonnage 512,787.58; in all other parts of the country the number of this class of vessels was, on the same date, 213 and their gross tonnage 319,750.84. The classification of the entire lake fleet is as follows:

Class.	Number.	Tonnage.
Steam vessels.....	1,592	756,751.53
Sailing vessels.....	1,243	325,131.06
Canal boats.....	703	72,515.42
Barges.....	62	20,472.37

Total..... 3,600 1,154,870.38

Tonnage built on the lakes during the past five years, according to the reports of the United States commissioner of navigation, is as follows:

	No. of boats.	Net Tonnage.
1887.....	152	56,488.32
1888.....	222	101,102.87
1889.....	225	107,080.30
1890.....	218	108,515.00
1891.....	204	111,856.45

Total..... 1,021 485,042.94

St. Mary's Falls and Suez canal traffic: Number of boats through St. Mary's Falls canal in 1890, 228 days of navigation, 10,557; tonnage, net registered, 8,454,435. Number of boats through Suez canal during 1890, full year, 3,389; tonnage, net registered, 6,890,014. Number of boats through St. Mary's Falls canal in 1891, 225 days of navigation, 10,191; tonnage, net registered, 8,400,685. Number of boats through Suez canal during 1891, full year, 4,207; tonnage, net registered, 8,698,777.

Entered at Cleveland Post Office as Second-class Mail Matter.

WE HAVE no thought of discouraging the noble work carried on by the United States life-saving service, but it does seem as though the officers of this service are injuring their claim for public recognition through absurd statistical reports sent out with the close of the treasury department's fiscal year. A summary of Superintendent Kimball's report for 1892, now being given wide publicity, makes, for instance, the following claims: "The number of disasters to documented vessels within the field of the operations of the service during the year was 337. There were on board these vessels 2,570 persons of whom 2,550 were saved and 20 lost. The estimated value of the vessels involved in the disasters was \$5,584,160, and that of their cargoes \$2,700,365, making a total value of property imperiled \$8,284,525. Of this amount \$7,111,005 was saved and \$1,173,520 lost." At such a rate of progress in the life saving service there will be no loss of life or property from ship wreck in a few years, and insurance companies might as well give up business. The figures are, of course, worthless, and the same may be said of a great deal of data emanating from the steamboat inspection service and bearing upon loss of life on steam vessels.

PRESIDENT HARRISON'S message has again brought out an expression of opinion from leading statesmen favorable to the scheme for a ship canal from the lakes to the seaboard. Senator Hill and Congressman Tracy of New York are now said to favor this big project. This is good news for the representatives of northwestern commercial interests who have worked so earnestly for recognition in this matter, and who were most in fear of serious opposition from New York. If the support from Senator Hill and others, now mentioned in connection with the discussion attending this canal question amounts to enough to secure the passage in the present congress of the Bentley bill, which calls for a survey, a great victory will have been gained.

ABOUT \$32,450 has been collected in tolls on Canadian freight in the three months since President Harrison's retaliatory measure went into effect at the St. Mary's Falls canal. This is a very small item and is, no doubt, very much below the amount exacted from American commerce through the discriminating tolls on the Welland. Retaliation of this kind is undignified and unbecoming in a country like ours, according to the argument of some newspaper editors, who do not understand the importance of the question which hinges upon the present canal controversy. Congress will do well, nevertheless, to give the president even further power, so as to deal with the question of railway privileges now accorded to the dominion.

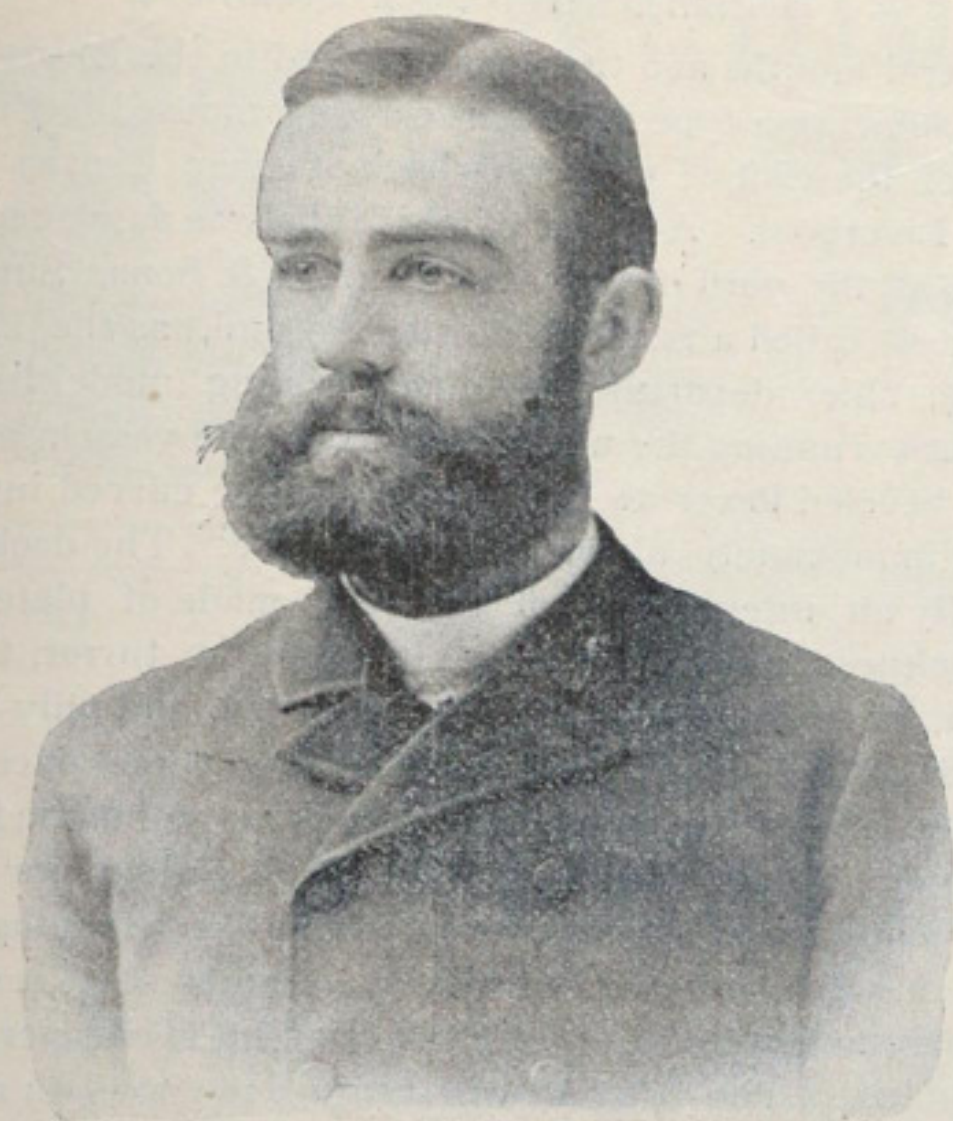
IN ANSWER to a request from congress for information relative to that part of the treaty of 1817 bearing upon the building of war vessels on the lakes, Secretary Foster says that the treaty is still in force. It is now in order to modify this treaty so as to give lake ship builders an opportunity to compete with the coast builders in the construction of vessels of war for sea-going service. Do not, however, make any change in that part of the treaty in which it was agreed that neither government shall maintain more than two war vessels on the lakes at any one time. This clause in the treaty has saved millions to both countries.

Bespeaks Success for the Baker Boat.

W. M. Folger, chief of the bureau of ordnance, says in his annual report to the secretary of the navy: "On May 24, 1892, the chief of this bureau personally witnessed a private test at Detroit, Mich., of a submarine boat invented by Mr. George F. Baker of Chicago, Ill. Certain claims were made by the inventor as to endurance submerged and speed of the vessel, and the chief of the bureau requested that an attempt be made to steer a course one mile in length at a speed of about six knots per hour, which conditions are less than the efficiency claimed in these particulars. A test which was made did not fulfill the conditions requested, but enough of the qualities of the boat were developed to indicate fair promise of success in the future, after certain ameliorations in motive power and methods of steering were applied, together with a more suitable locality as regards current and moving trading vessels. It was therefore requested of the owners of the boat that it be transferred to Chicago, where better water would be obtainable, when further trials would be made. These requisite changes have been made in the boat and the bureau expects a renewed trial in the near future, and it is proposed, in the event of a successful issue, that a test be also made of the application to this type of boat of a dirigible torpedo. It would seem that such application would be entirely practicable with either the Sims-Edison or Patrick methods of propulsion in a torpedo, and it is the bureau's intention to recommend such further test. It is believed that a submarine boat, either wholly or partially submerged, could be made an effective defensive weapon with either the dirigible torpedo or the submarine gun as the primary feature of its armament."

The second trial referred to above was made in Chicago several days ago, the boat having been taken to that city in accordance with the request from the ordnance department. In a letter to the REVIEW, Mr. Folger says the report of the trial is now in course of preparation. "It is the opinion of the bureau," he adds, "that the boat, in its present crude state, possesses many good features. Much yet remains to be done, however, to make it a practicable weapon for use in naval warfare."

W. Maginnis, in an address before the Liverpool Engineering Society recently said, in speaking of breakdowns in trans-Atlantic steamers, that though there had been 1,900 departures from each side, or nearly 74 a week from Oct. 1, 1891 to Oct. 1, 1892, he was only able to trace some seven cases of breakdowns of ordinary, and only three of these were really serious.



PROFESSOR W. F. DURAND.

A year ago there was established as a part of Cornell University, Ithaca, N. Y., a graduate school of marine engineering and naval architecture. W. F. Durand, an American engineer whose portrait is presented herewith, was made principal of the school upon its organization, and has since been untiring in his efforts to secure its success. During last spring and summer Prof. Durand visited Europe for the purpose of examining the government schools of naval architecture at Paris, Genoa, Berlin, Kiel and Greenwich, as well as the course in this subject given at Glasgow University. Visits were also made to the leading shipyards in England and Scotland and on the continent, and next summer the shipyards of the lakes will be visited. The success and value of the school depend much upon recognition from ship builders, and it is to be hoped that Prof. Durand will be given a cordial reception on the lakes.

"The immediate purpose of the school," says the American Shipbuilder, from which the engraving is taken, "is to promote, in every way possible, the science and art of marine construction in the United States, and more particularly to furnish a place where young men may obtain a thorough education in naval architecture and marine engineering, at least so far as such may be given in an institution of learning rather than in the ship yard and shop. With our splendid educational system in general and our unexcelled technical schools for general mechanical engineering, it is certainly a serious lack that previous to this time there have been no such schools in this country. In consequence our ship yards have not been accustomed to look to the technical schools for their new scientific personnel to the same extent as prevails with general mechanical and electrical engineering."

Prof. Durand graduated from the United States Naval Academy in 1880 and remained in the naval service as an assistant engineer until 1887, when he accepted the chair of mechanical engineering in the State Agricultural and Mechanical College of Michigan. Four years later, in 1891, he was elected professor of mechanical engineering at Purdue University, Lafayette, Ind. This position was resigned the same year to accept the principalship of the school at Cornell University. George R. McDermott, late with J. & G. Thompson of Clydebank, Scotland, is the assistant professor.



Friends of Capt. Leeds H. Weeks are invited to attend a memorial service to be held at his late residence at Vermillion, O., Sunday afternoon.

A contract was a few days ago awarded the King Bridge Company of Cleveland by Detroit park commissioners for a bridge in Belle Isle, to cost \$3,975.

Capt. Frank A. Dority, master of the steamer Colorado during the past two seasons will sail the new Ann Arbor No. 2. She will leave Toledo next week for Frankfort, Mich.

Capt. Frank Hackett's tug International, which was almost entirely destroyed by fire at Amherstburg Thursday night, was not fully insured. The boat was valued at \$6,000.

Chicago received during the season of navigation just closed 1,419,078,000 feet of lumber and 270,121,000 shingles, as against 1,359,315,000 feet of lumber and 226,469,000 shingles in 1891.

The handsome steam yacht Comanche, built by the Globe Iron Works Company, Cleveland, is in Manning's basin, New York, and will leave for the West Indies between Christmas and New Year's.

The two revolving steam traveling derricks mentioned in the description of the Conneaut docks, some time since, were manufactured complete and erected by the Excelsior Iron Works Company, Cleveland.

A Trout wheel applied to the steamer Marquette increased her speed a mile an hour running alone, loaded, and three-quarters of a mile on two less revolutions when running with a tow. This is equal to a round trip to Duluth for the season.

It is expected that the general government will be in full control of the Sturgeon bay canal with the opening of navigation next spring. All papers bearing upon the purchase are now being examined by the attorney general.

Charles F. Elmes' engineering works will be moved from the present location in Chicago during the month of January to corner of Morgan and Fulton streets. The new shop will be equipped with a 20-ton traveling crane and a 10-foot boring and turning mill.

Mr. L. P. Smith of the firm of L. P. & J. A. Smith of Cleveland, owners of the sunken tug James Amadeus, spent a few days of last week at Amherstburg, Ont., trying to locate the boat, which went down below Point Pelee. The effort was abandoned, but Capt. Frank Hackett of Amherstburg is of the opinion that the boat will be found by the ice piling up around her in the spring.

Mr. T. F. Newman, who leaves the Detroit & Cleveland Steam Navigation Company on Jan. 1, to become general manager of the Cleveland & Buffalo Transit Company, was accorded a great honor at a dinner given to the active managers of the affairs of the Detroit & Cleveland company at the home of General Manager Carter in Detroit a few days ago. In addition to a general expression of good feeling from his associates, Mr. Newman was presented with 375 silver dollars, carried to the dinner table on a large tray.

Henry W. Wheeler of Duluth, a St. Paul banker and a Great Barrington (Mass.) capitalist, and James Clark, formerly chief draughtsman for the American Steel Barge Company, expect to build a modified form of whaleback craft at Duluth during the coming winter. The first one will be built at the dock of the Iron Bay company, where machinery for bending and punching can easily be put in operation. The plates will be bought from the West Superior steel plant and the steel car works will furnish the angles. Nothing is stated as to the amount of capital enlisted, but Mr. Wheeler claims that their style of craft will be stronger than the whaleback, and that they have avoided all the McDougall patents.

ANY ONE SENDING TWO ADDRESSES AND \$4 TO THE MARINE REVIEW, 516 PERRY-PAYNE BUILDING, CLEVELAND, WILL, IN ADDITION TO HAVING THE BEST MARINE PAPER SENT TO THEM FOR A YEAR, RECEIVE A COPY OF WASHINGTON IRVING'S LIFE AND VOYAGES OF CHRISTOPHER COLUMBUS.

Lake Carriers' Association.

M. A. BRADLEY, President.

VICE-PRESIDENTS: { James W. Millen, Detroit, Mich. John G. Keith, Chicago, Ill.
Frank J. Firth, Erie, Pa. W. S. Brainard, Toledo, O.
Thomas Wilson, Cleveland, O. R. P. Fitzgerald, Milwaukee, Wis.
Peter F. Miller, Buffalo, N. Y. Alex. McDougall, Duluth, Minn.
Charles H. Keep, Secretary, Buffalo, N. Y. Geo. P. McKay, Treasurer, Cleveland, O.
Harvey D. Goulder, Counsel, Cleveland, O.

At a meeting of the finance committee in Cleveland on Monday, Secretary Keep was present and it was decided to hold the annual meeting of the general association in Detroit on Thursday, Jan. 12. Finances of the association are in good shape, and it is expected that expenses for next year will be reduced, on account of relief received from the government taking charge of some of the private lights. Expenses connected with shipping offices will continue, however, and the maintenance of this service at Chicago and South Chicago next season will require quite an expenditure of money. It is also expected that an effort will be made to take into the association the Lake Michigan lumber fleet, which is a most important part of shipping at Chicago. At the annual meeting, attention will be given to abuses arising in the coal trade from some shippers insisting on furnishing fuel to all steamers for which cargoes are provided. This condition acts against cargoes being secured for consortships and schooners, and is in many other ways detrimental to the vessel interests. The committee refused to consider a proposition from the general agents of the lake underwriters, that vessel owners bear a portion of the expense of publishing the proposed new Inland Lloyds Register. The Lake Carriers' take the ground that as an association they can not take up a matter of expense of this kind.

It has been suggested that at the annual meeting of the association a change should be made in the name of the finance committee. The name seems to cover money matters exclusively, when, in fact, this committee is in charge of all affairs of the association outside of legislation and aids to navigation. Reports of a finance committee dealing with shipping offices and such matters as were taken up at the last meeting, for instance, do not sound just right.

Engines Amidships.

Of the four steel steamers now under way at the yard of F. W. Wheeler & Co., West Bay City, three will have their engines amidships and will also have large water ballast capacity and increased facilities for handling the same. Three of these boats now on the stocks are for D. C. Whitney of Detroit, the Hawgood & Avery Transit Company of Cleveland, and Capt. John Mitchell and others of Cleveland. The fourth boat, the keel for which will take the place of the Mitchell steamer, is projected on owners' account, but will undoubtedly be sold before work is very far advanced. Of the changes to be inaugurated in all of the boats excepting the Mitchell steamer, Mr. H. A. Hawgood makes the following explanation:

"Our engines will be placed amidships, with 136 feet of shaft, and will be so located that we will have six hatches forward and four aft, with one trimming hatch between engine and boiler houses. The hatches are laid off with reference to 24 feet centers, the engines and boilers taking up space of two hatches. In this way we will have three-fifths of our cargo forward and two-fifths aft. Water ballast arrangements as now agreed upon will give us, when running without cargo, 6 feet forward and 14 feet aft, and if desirable we have made provision for even increasing this draft in water ballast. Water can be handled at the rate of 1,400 tons an hour. In loading at coal and ore docks, it is expected that these extra facilities for putting the vessel deep into the water and pumping her out as the cargo is being taken aboard will prove of special advantage, although the great aim is, of course, to insure safety when running light."

British Turret-Deck Steamers.

Several months ago there was printed in the REVIEW an engraving showing a type of freight carrier proposed in England, as a result of the visit of the whaleback steamer Charles W. Wetmore to Liverpool. A vessel of this type was launched a short time ago at the yard of Messrs. Doxford & Sons, Sunderland. The boat is called a turret-deck steamer and, as the name suggests, the chief departure from the existing model lies in her turret deck running the whole length of the vessel, and rising out of a beveled lower deck, whose plates are curved inward and upward immediately above the water-line. The deck is thus practically an integral part of the hull, made of plates of the same thickness, and having above it, or on the turret, the working deck, which is high above the water-line, and only one-third the width of the vessel. It is divided into three exceptionally large hatches, and the turret itself acts as an automatic feeder for grain, coal, or other bulk cargoes. It is claimed for the new type, which is really designed to combine the advantages of the whaleback with those of the ordinary steamer, that it ensures a larger carrying capacity on a lighter draught, is cheaper to work, and costs less. The "turret" will carry 3,200 tons on a net register of 1,250 tons, and draws only 18 feet. Her engines are aft, leaving the entire hold space free. If these advantages are demonstrated by actual experience, there is a future before the new type.

In General.

The Welland canal closed for the season on the 12th inst. at midnight.

D. J. Galanaugh of Philadelphia is constructing of aluminum an eight-oared racing shell for the crew of Cornell university.

Engineers desiring to read a 100-page book, 7x5 inches, giving full information of all kinds of Worthington pumps will receive the same by writing to H. R. Worthington, New York, N. Y.

The Roberts boiler works has nearly completed a large boiler for a new tug lately launched by James Molyneux & Co. of Bordentown, N. J. The tug is intended for use on the Delaware river and will have a 16x16 engine.

The King Bridge Company, Cleveland, has a contract for an additional hoisting and carrying plant for handling coal and iron ore on the new docks of the Pittsburg, Chenango & Lake Erie Railway at Conneaut, O.

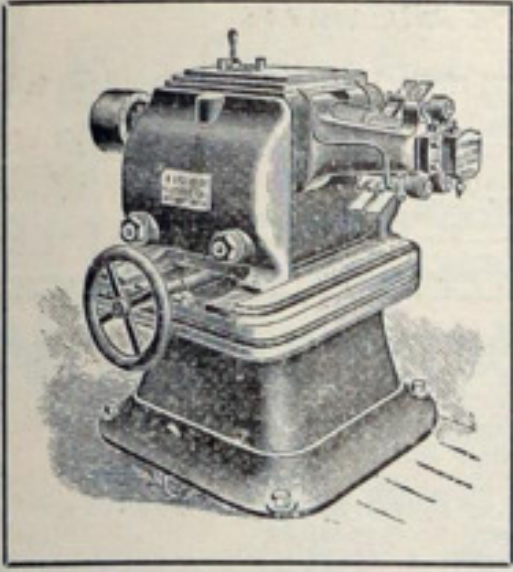
A first class dredge of large size with two dump scows will be constructed this winter by Rieboldt, Wolter & Co. of Sheboygan, Wis., for the Sheboygan Dredge and Dock Company. The machinery will be constructed in Milwaukee.

Keel blocks have been laid for two of the five new vessels of American registry, which the Inman company have engaged to build, for the purpose of carrying trans-Atlantic mails under the postal subsidy act, passed at the last session of congress.

Underwood & Cowan, lumber shippers of Menominee, now own the steamer John C. Pringle and consorts Ben Harrison and Sweetheart, and also the schooner Arctic. The Pringle tow will be kept together and run in the owners' lumber trade between Menominee and Buffalo and Tonawanda. An outside tow will be selected for the Arctic.

When Capt. McKinnon of the Northerner took out his clearance at Buffalo for Duluth he remarked with a wink that he had goods on board for Port Arthur but intended to give them the slip and stay in Duluth. Fifteen days later his vessel is a second time a total loss from fire. When she burned at Kelley's island several years ago she was for a time reckoned not worth a rebuild.

UNITED STATES ENGINEER OFFICE,
Hickox Building, 185 Euclid Avenue, Cleveland, Ohio, December 12, 1892. Sealed proposals for dredging in straight channel at Sandusky Harbor, Ohio, will be received at this office until 2 o'clock P. M., standard time, of Friday, December 30, 1892, and then publicly opened. Specifications, blank forms and all available information will be furnished on application to this office. JARED A. SMITH, Corps of Engineers, U. S. A.
15-22-29



AUTOMATIC INCANDESCENT LIGHTING PLANTS



OF OUR MANUFACTURE are endorsed by the following Owners and Managers of some of the Finest Steam Vessels on the Lakes:

PLANTS ON

W. P. HENRY, BUFFALO, N. Y. General Manager Lehigh Transit Co.	Four Steel Freight Steamers
JOHN GORDON, BUFFALO, N. Y. General Manager Northern Steamship Co.	Five Steel Freight Steamers
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T. F. NEWMAN, CLEVELAND, O. Gen'l Mgr. Cleveland & Buffalo Transportation Co.	Two Side-wheel Passenger Steamers
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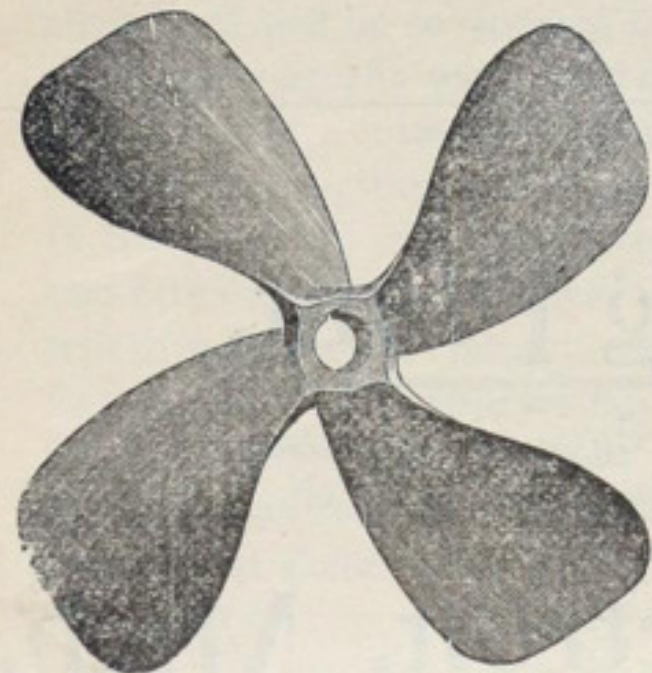
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U. S. ENGINEER OFFICE, HICKOX BUILD-
ing, 185 Euclid Avenue, Cleveland, Ohio, November 22d, 1892. Sealed proposals for extending East and West Piers at Fairport Harbor, Ohio, will be received at this office until 2 p. m. of Thursday, December 22d, 1892, and then publicly opened. Specifications, blank forms and all available information will be furnished on application to this office. JARED A. SMITH, Corps of Engineers, U. S. A.

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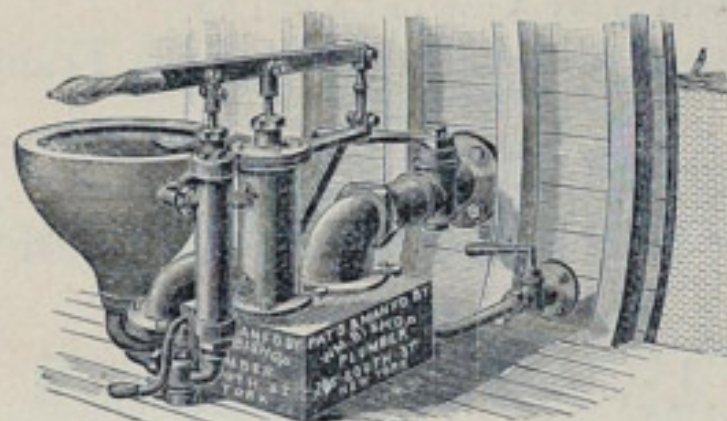
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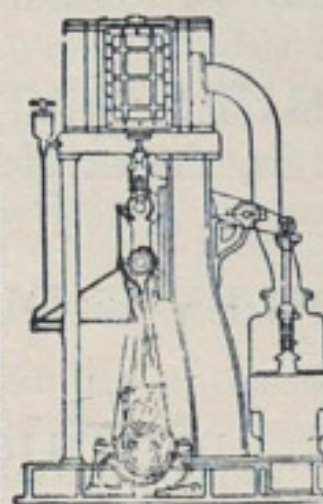
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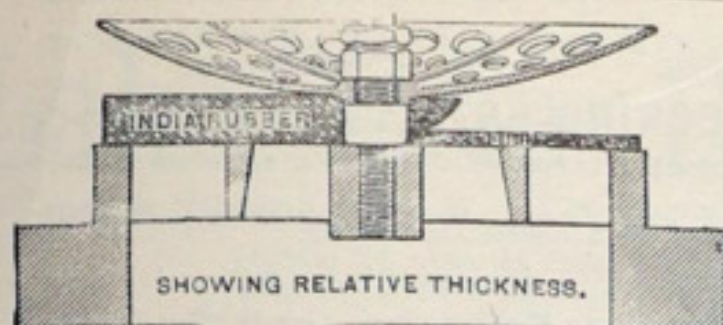
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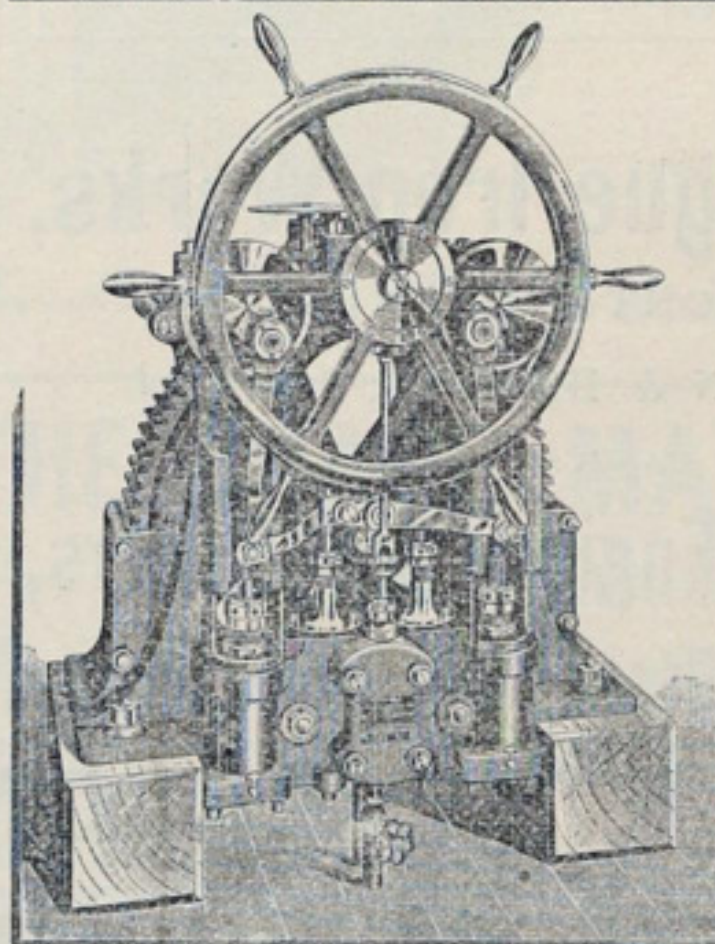
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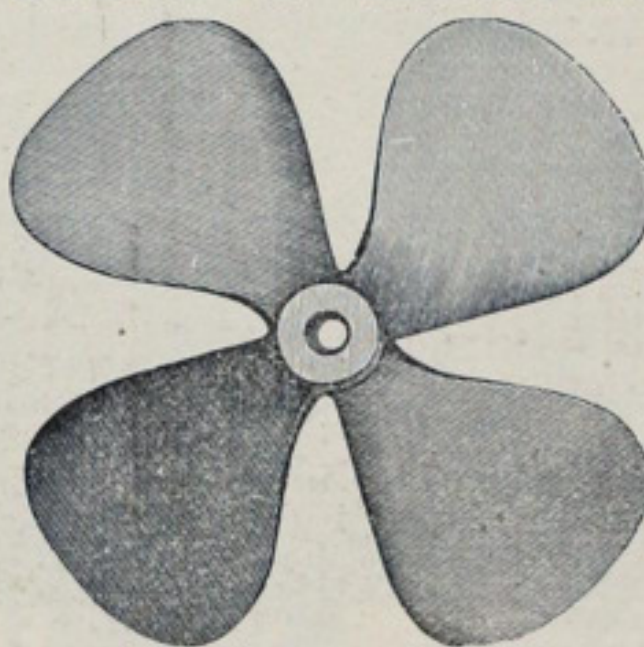
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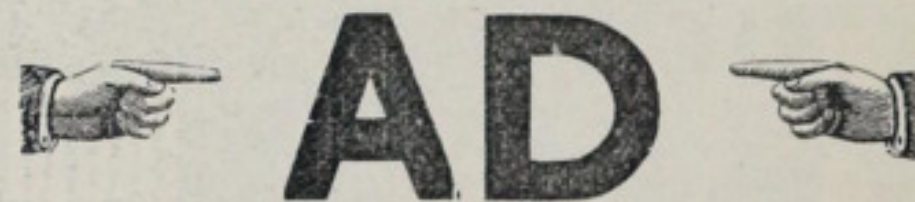
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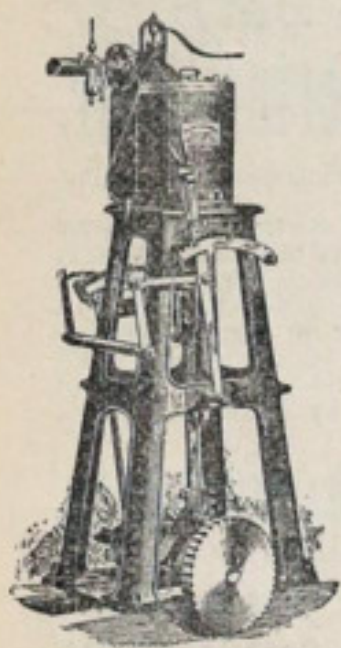
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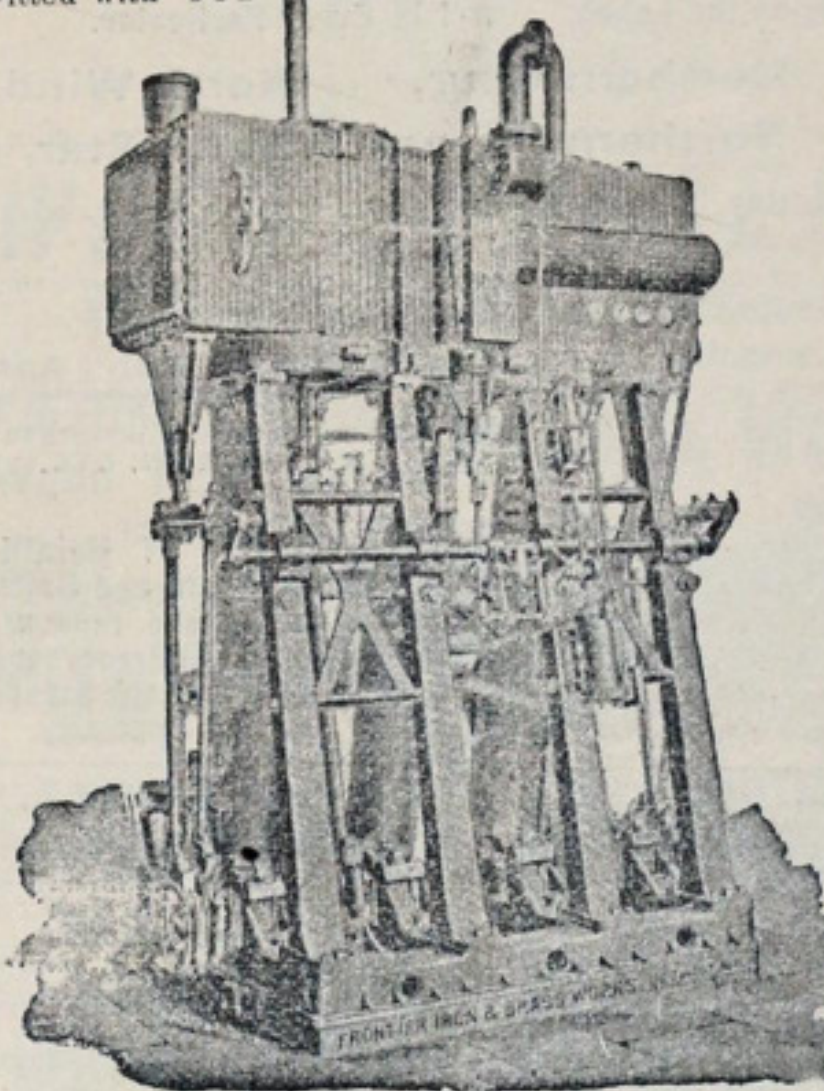
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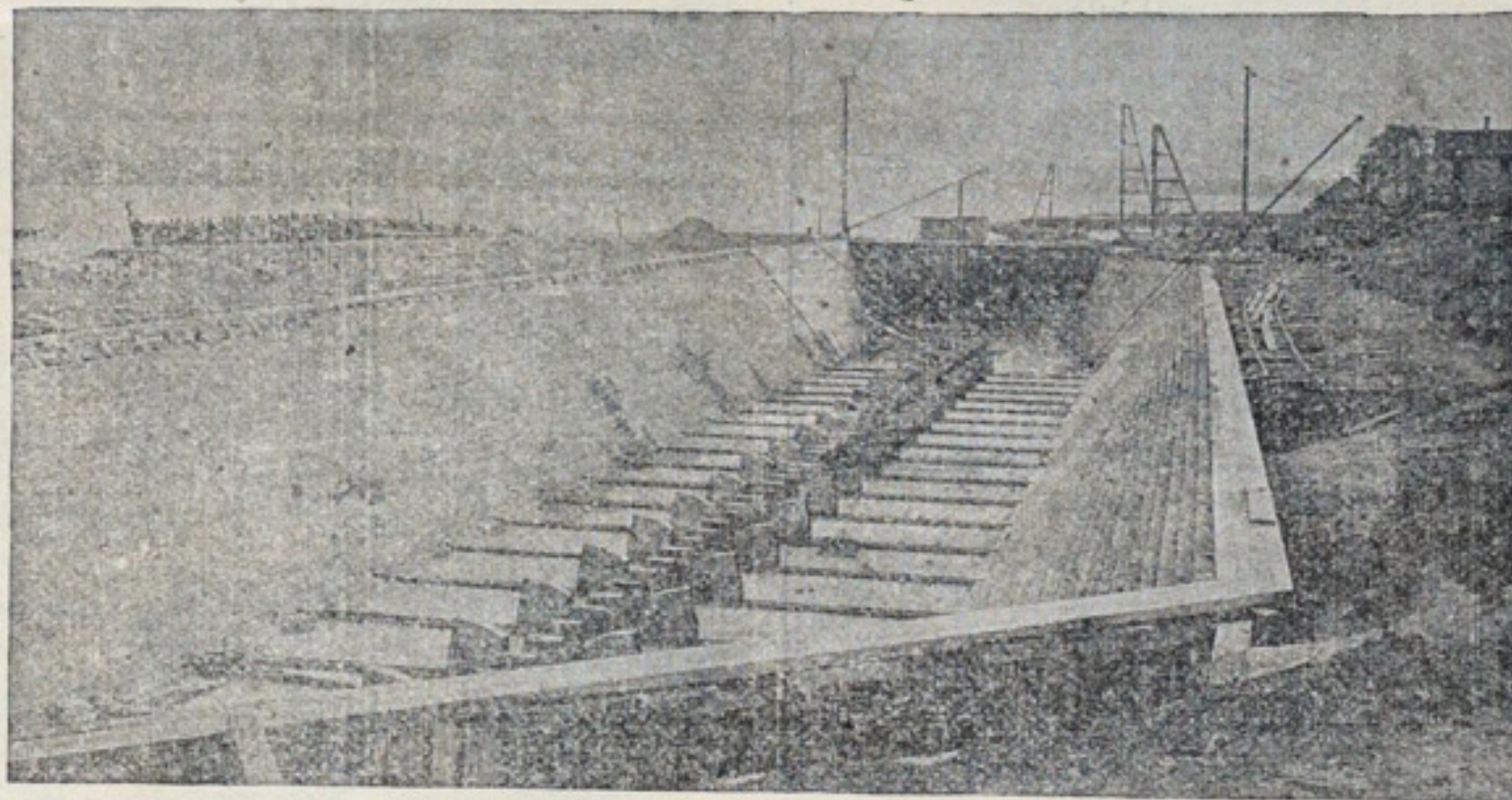
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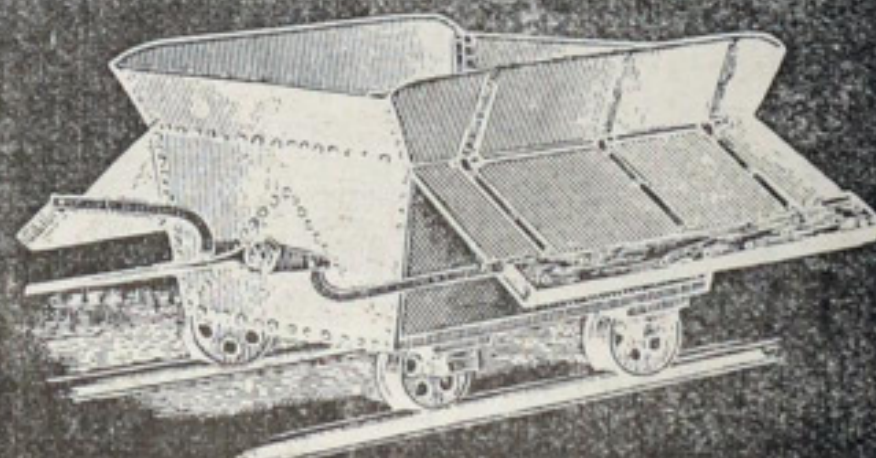
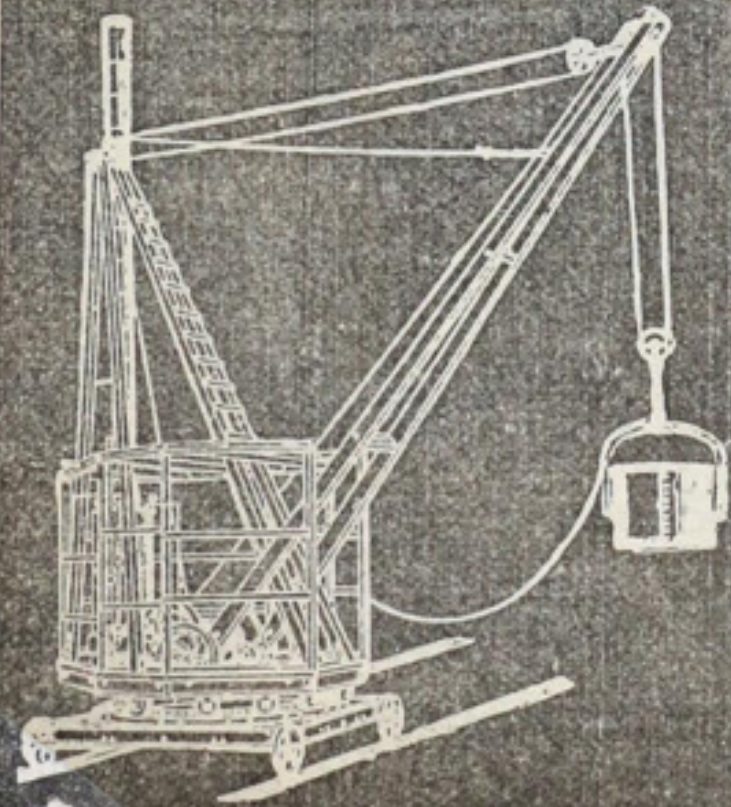
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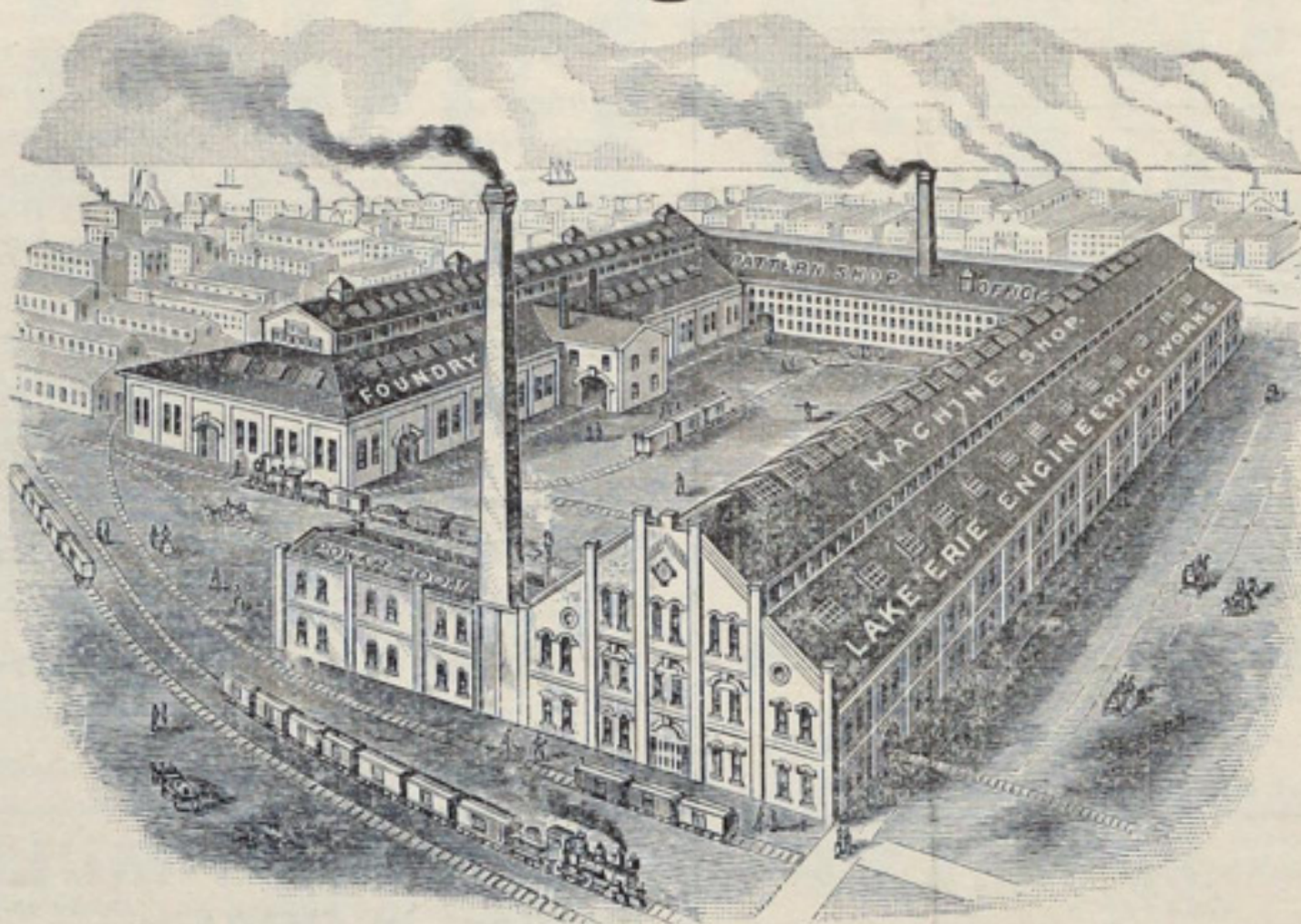
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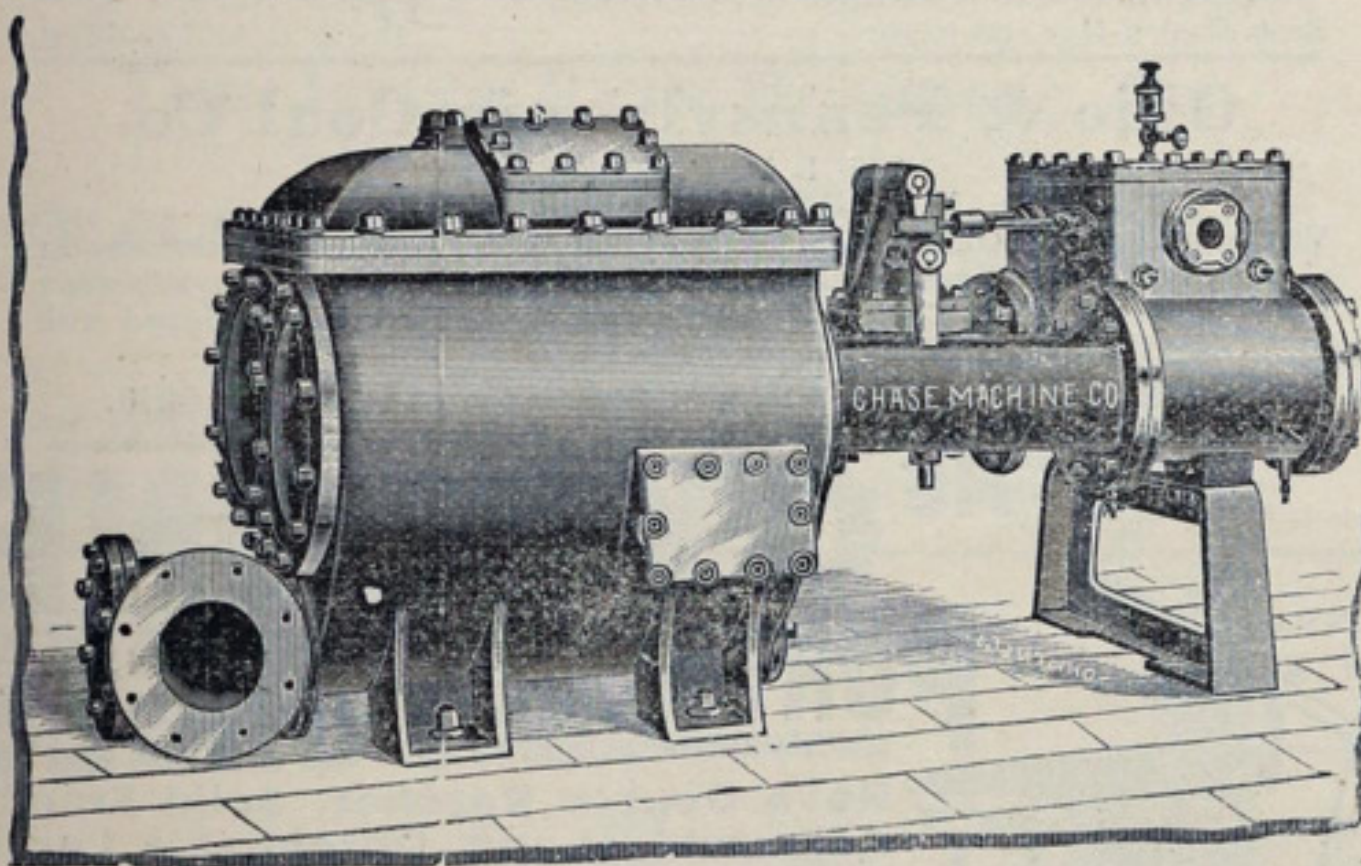
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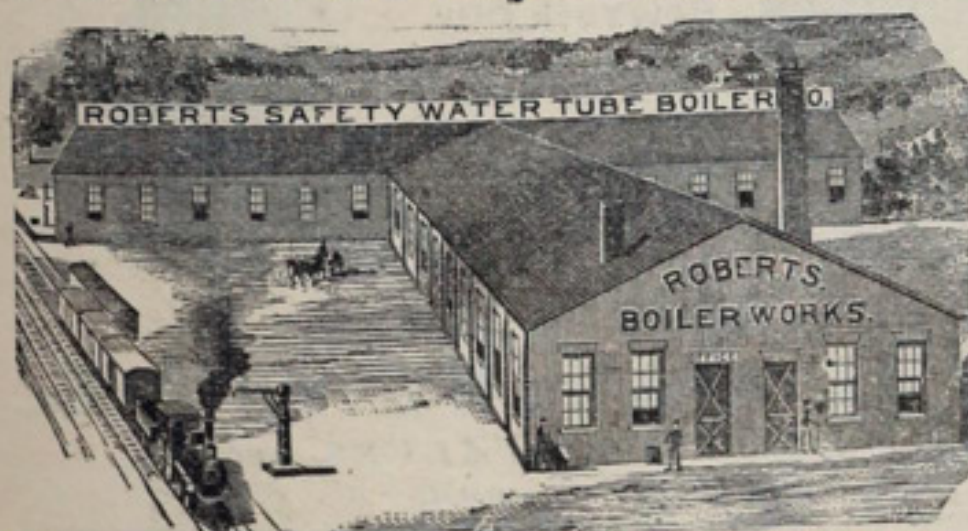
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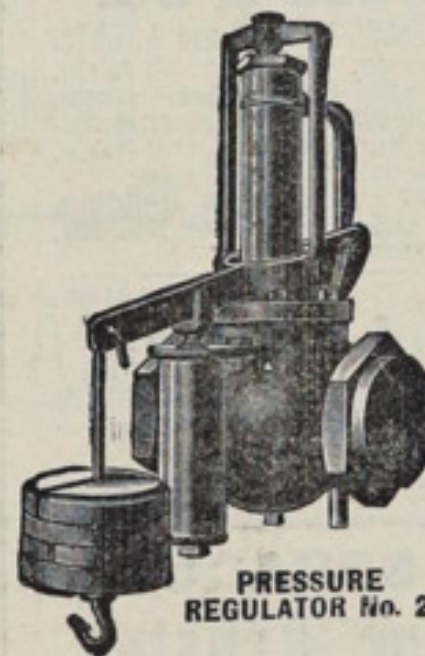
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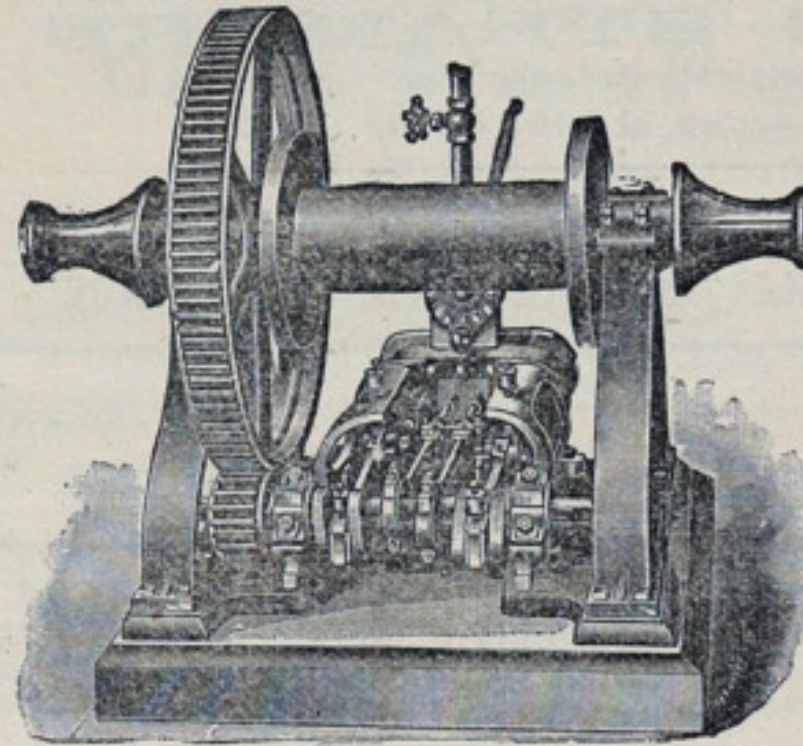
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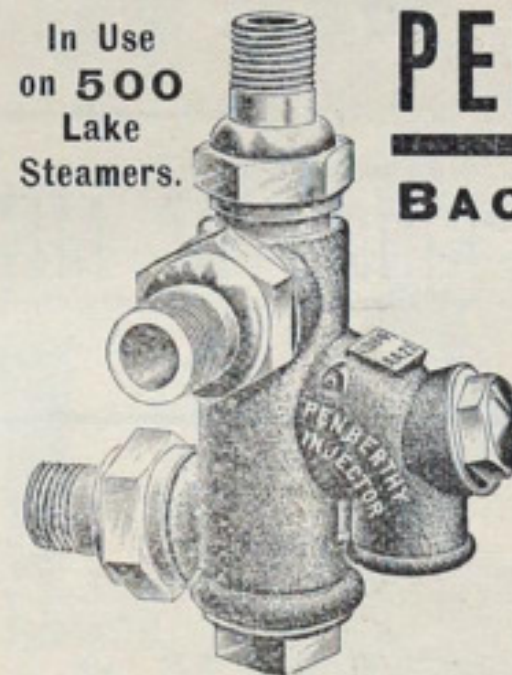
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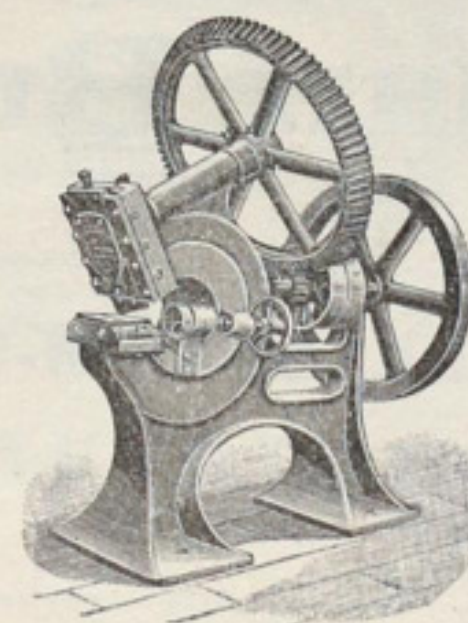
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